

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend





### PETRO CANADA DURON SHP 15W40 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

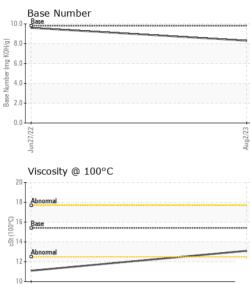
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

			Jun2022	Aug2023		
SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		SBP0003841	SBP0000085	
Sample Date		Client Info		02 Aug 2023	27 Jun 2022	
Machine Age	hrs	Client Info		912	411	
Oil Age	hrs	Client Info		249	279	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	ATTENTION	
CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	0.1	
Glycol		WC Method	20	NEG	NEG	
,			1			h la ta ma
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	16	18	
Chromium	ppm	ASTM D5185m	>20	<1	<1	
Nickel	ppm	ASTM D5185m	>4	0	0	
Titanium	ppm	ASTM D5185m		0	0	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	<1	4	
Lead	ppm	ASTM D5185m	>40	<1	0	
Copper	ppm	ASTM D5185m	>330	2	4	
Tin	ppm	ASTM D5185m	>15	<1	<1	
Vanadium	ppm	ASTM D5185m		<1	0	
	ppm					
Cadmium	nnm	ASTM D5185m		0	0	
	ppm	ASTM D5185m	1	0	0	
ADDITIVES	ppm	method	limit/base	current	history1	 history2
ADDITIVES	ppm ppm	method ASTM D5185m	0	current 11	history1 9	
ADDITIVES Boron		method ASTM D5185m		current	history1	history2
ADDITIVES Boron Barium	ppm	method ASTM D5185m	0	current 11	history1 9	history2 
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 11 0	history1 9 0	history2 
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 11 0 56	history1 9 0 56	history2  
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 11 0 56 <1	history1 9 0 56 <1	history2   
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 11 0 56 <1 986	history1 9 0 56 <1 902	history2    
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 11 0 56 <1 986 1167	history1 9 0 56 <1 902 1227	history2    
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 11 0 56 <1 986 1167 1006	history1 9 0 56 <1 902 1227 1013	history2     
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current           11           0           56           <1           986           1167           1006           1256	history1 9 0 56 <1 902 1227 1013 1226	history2      
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 11 0 56 <1 986 1167 1006 1256 3169	history1 9 0 56 <1 902 1227 1013 1226 3454	history2       
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 4 ppm 2 ppm 4 ppm 4 ppm 4	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current         11         0         56         <1         986         1167         1006         1256         3169         current	history1         9         0         56         <1	history2       
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 imit/base >25	current           11           0           56           <1           986           1167           1006           1256           3169           current           5	history1 9 0 56 <1 902 1227 1013 1226 3454 history1	history2      history2 
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 4 ppm 4 ppm 4 ppm 4 ppm 4	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 imit/base >25	current           11           0           56           <1           986           1167           1006           1256           3169           current           5           2	history1         9         0         56         <1	history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25	current         11         0         56         <1         986         1167         1006         1256         3169         current         5         2         2         current	history1         9         0         56         <1	history2 history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm 1 ppm 2 ppm 2 ppm 4 ppm 4	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>Imit/base</b> >20	current         11         0         56         <1         986         1167         1006         1256         3169         current         5         2         2         current         0.1	history1         9         0         56         <1	history2 history2 history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	Ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	current         11         0         56         <1         986         1167         1006         1256         3169         current         5         2         current         0.1         7.7	history1         9         0         56         <1	history2 history2 history2 history2 history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	current         11         0         56         <1         986         1167         1006         1256         3169         current         5         2         current         0.1         7.7         18.7	history1         9         0         56         <1	history2 history2 history2 history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7185M         *ASTM D7624         *ASTM D7415         method	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 3 3 20 20 3 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	current         11         0         56         <1         986         1167         1006         1256         3169         current         5         2         current         0.1         7.7         18.7         current	history1         9         0         56         <1	history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 <i>limit/base</i> >3 >20 <i>limit/base</i> >3 20	current         11         0         56         <1         986         1167         1006         1256         3169         current         5         2         current         0.1         7.7         18.7	history1         9         0         56         <1	history2



Jun27/22

# **OIL ANALYSIS REPORT**



	VISUAL		method				history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Aug2/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	
Aug	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.1	▲ 11.1	
	GRAPHS						
	Ferrous Alloys						
	16- iron						
	14-						
	12						
	E <sup>10</sup>						
	6						
	4						
	2						
	22	********		723			
	Jun27/22			Aug2/23			
	Non-ferrous Me	tals		Aug2			
	Non-ferrous Me	tals		Aug2			
	Non-ferrous Met	tals		Aug2			
	Non-ferrous Me	tals		Aug2			
	Non-ferrous Met	tals		Aug2			
	Non-ferrous Met	tals		Aug2			
	Non-ferrous Met	tals		Aug			
	Non-ferrous Met	tals		Aug2			
	Non-ferrous Met	tals					
	Non-ferrous Med	tals					
	Non-ferrous Mel			Aug2/23			
	Non-ferrous Met				Base Numb		
	Non-ferrous Mei			4n02/23	Base		
	Non-ferrous Mel			4n02023	Base		
	Non-ferrous Met			4n02023	Base		
	Non-ferrous Met			4n02023	Base		
	Non-ferrous Mel			4n02023	Base		
	Non-ferrous Mei Copper Non-ferrous Mei Copper Non-ferrous Mei Lead Viscosity @ 100 Costing Non-ferrous Mei Lead Viscosity @ 100			10.1 ber (mg K0H(0)			
	Non-ferrous Mei Copper Non-ferrous Mei Copper Non-ferrous Mei Copper Non-ferrous Mei Copper Viscosity @ 100 Costing Cos			10.1 ase Number (mg KOH(g) 11.0	D Base		
	Non-ferrous Mei Copper Non-ferrous Mei Copper Viscosity @ 100 P Non-ferrous Mei Copper Viscosity @ 100 P Copper Colling Copper Co			10.4 Base Number (mg KoHko) Base Number (mg K	Base		
	Non-ferrous Mei Cooper Non-ferrous Mei Cooper Non-ferrous Mei Lead Viscosity @ 100 Cooling Abnormal Lead Abnormal Abn			10.1 8.8. (6)ADA 8288 grupper (ud KDH/G) 8288 grupper (ud KDH/G) 828 grupper (ud KDH/G) 828 grupper (ud KDH/G) 828 grupper (ud KDH/G) 828 grupper (ud KDH/G) 82 grupper (ud KDH/	D Base		
Laboratory Sample No. Lab Number Unique Numbe Test Package	Non-ferrous Mei 10 10 10 10 10 10 10 10 10 10	• C - 501 Madii Receiver Diagnos Diagnosi nal Tests: T	d : 02 ( ed : 03 ( tician : Wes 'BN )	10.4 ECCCOMP (0)HOY Bull Jack Market Marke	Base 22/IZunr	stern Sand and (	

Submitted By: ZACH SPURLOCK

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